a first current source switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode;

a second current source switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current; and

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a buffer circuit coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes.

A marked-up version of the claim 17 appears at the end of this Amendment.

REMARKS

In the Office Action, the Examiner rejected all pending claims, namely claims 1-19. The Examiner rejected these claims under 35 U.S.C. § 103 as being unpatentable over United States Patent 5,886,763 issued to Wolkowicz et al. ("Wolkowicz"). In this Amendment, Applicants have amended claim 17. Accordingly, claims 1-19 remain pending after entry of this amendment.

Claims 1-12.

Applicants respectfully submit that Wolkowicz does not render the claims unpatentable. Claims 1-12 recite a switchable polarizer for optical projection displays. This polarizer includes: (1) a first electrode, (2) a second electrode, and (3) a layer of liquid crystal material positioned between the first and second electrodes. In this polarizer, the first and second electrodes conduct current to heat the polarizer.

Applicants respectfully submit that Wolkowicz does not invalidate claims 1-12 as it does not disclose, teach, or even suggest a layer of liquid crystal material positioned between two electrodes that conduct current to heat the polarizer. Wolkowicz discloses a LCD heating

technique that uses a conductive layer (3) to heat the LCD. This layer is in addition to the two layers of electrodes (7 and 11) between which the LCD's liquid crystal material is situated. As the Examiner mentioned, Wolkowicz heats the heating layer through two bus bars that adhere to the heating layer.

Wolkowicz heating technique is like the prior art heating technique disclosed in Figure 2 of the application. As discussed on page 3, lines 8-17 of the application, this prior heating technique has several disadvantages. One disadvantage is that the potential difference across the heating layer results in a potential gradient across the liquid crystal material. This potential gradient causes polarization of the light to be non-uniform across the liquid crystal material. Another disadvantage is that the heating electrode attenuates the intensity of the light. Each layer of indium tin oxide (which Wolkowicz discloses as a material that can be used for its heating layer 3) attenuates four to six percent of the light depending on the wavelength of the light. The light is attenuated the most in the blue range, which often is one of the more important color components. The attenuation of the light, in turn, degrades the brightness and contrast of the display system.

The polarizers recited in claims 1-12 are novel and patentably distinct from Wolkowicz disclosure since they conduct current through the electrodes between which the liquid crystal material is positioned. Accordingly, these claimed polarizers perform their heating operation without using a third electrode, which could introduce adverse effects (such as voltage gradients across the liquid crystal materials or light attenuation). Furthermore, the two bus bars of Wolkowicz cannot serve as the two electrodes recited in the claims 1-12 as they do not have the liquid crystal material between them.

Claims 13-16.

Claims 13-16 recite a method of driving a switchable polarizer in one of two modes. The switchable polarizer has first and second electrodes and a liquid crystal material between the electrodes. During a first driving mode, the electrodes heat the liquid crystal material,

while during the second driving mode, the electrodes do not heat the liquid crystal material. The method draws equal currents through the first and second electrodes during the first driving mode, and applies a first voltage signal to the first electrode and a second voltage signal to the second electrode during both the first and second driving modes. The first and second voltage signals sustain the currents drawn through the first and second electrodes during the first driving mode.

Applicants respectfully submit that Wolkowicz does not invalidate claims 13-16 as it does not disclose, teach, or even suggest a layer of liquid crystal material positioned between two electrodes that conduct current to heat the liquid crystal material. As mentioned above, Wolkowicz uses a third electrode to heat the LCD, like the prior art heating technique disclosed in Figure 2 of the application. In other words, unlike the recited method claims 13-16, Wolkowicz does not heat a liquid crystal material by drawing current through two electrodes between which the liquid material is positioned. Furthermore, the two bus bars of Wolkowicz cannot serve as the two electrodes recited in the claims 13-16 as they do not have the liquid crystal material between them.

Claims 17-19.

Claims 17-19 recite a switchable polarizing apparatus for optical projection displays. This apparatus includes (1) a first electrode for receiving a first driving signal, (2) a second electrode for receiving a second driving signal, and (3) a layer of liquid crystal material positioned between the first and second electrodes. It also includes (1) a first current source, switchably coupled to the first electrode, for drawing a first current through the first electrode; and (2) a second current source, switchably coupled to the second electrode, for drawing a second current through the second electrode, where the second current is equal in magnitude to the first current. The claimed apparatus further includes a buffer circuit coupled to the first and second electrodes. This buffer circuit applies the driving voltage signals to the first and

second electrodes, and the driving signals sustain the first and second currents through the electrodes. Applicants have amended the claims to reflect that the first and second driving signals are different. *See* amended claim 17; *see also* page 11, line 4 to page 13, line 17 of the application.

Applicants respectfully submit that Wolkowicz does not invalidate claims 17-19 as it does not disclose, teach, or even suggest the switchable polarizing apparatus recited in these claims. Specifically, it does not disclose, teach, or even suggest a buffer circuit, coupled to the first and second electrodes, for applying the different driving voltage signals to the first and second electrodes, where the driving signals sustain the equal first and second currents through the electrodes.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-19. Applicants respectfully submit that all the pending claims, namely claims 1-19, are in condition for allowance. Applicants respectfully request allowance of the claims at the earliest possible date.

Respectfully submitted,

Dated: September 18, 2002

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Reg. No.: **39,585**

MARKED-UP VERSION OF AMENDED CLAIMS

The following provides the amended claim 18 with deleted text in [brackets] and new text underlined.

17. A switchable polarizing apparatus for optical projection displays, said apparatus comprising:

a first electrode for receiving a first driving signal, and a second electrode for receiving a second driving signal, wherein the first and second driving signals are different;

a layer of liquid crystal material positioned between the first and second electrodes;

a first current source switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode;

a second current source switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current; and

a buffer circuit coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes.